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ABSTRACT

Described is Project COMP (Computerized Operational Materials Prescription), an individualized reading instructional program for educable mentally retarded (EMR) children in regular or special classes. The program is designed to correlate with the Wisconsin Design for Reading (WDR) and to utilize a diagnostic teaching specialist who uses specific reading instructional methods, materials, and techniques. A unique characteristic of the program is the provision to teachers of computer printout feedback which identifies reading skills accomplished, skills not mastered, and materials (with location) for subsequent instruction. The program is currently in use with 160 EMR, 347 disadvantaged, and 326 normal children. COMP consists of five components: the WDR (which has 45 objectives at four levels of progressive difficulty), periodic testing and feedback of results via computer printout, a computerized inventory of instructional materials, purchase of instructional materials appropriate to teach target skills, and inservice teacher education activities. Reported results show mean reading gains of the normal students from below average to above national norms and reading gains made with other programs for the EMR. Also noted are the cost ($10 per pupil), national recognition received, and positive evaluation in the Title VI Evaluation Report. (DB)

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Computerized Operational Materials Prescriptions
CESA #3
Gillett, Wis. 54143

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Introduction

Innovations in education demand hard work, imagination, vision, human understandings and persistance.

Cooperative Educational Service Agency #3, Gillett, Wisconsin, in cooperation with the Wisconsin Department of Public Instruction, had these qualities demonstrated through the leadership of Dennis Mullen, Computerized Operational Materials Prescription diagnostic teacher and project director. Mr. Mullen has a background in special education teaching, experience in supervision of handicapped programs, and holds a level A

The purpose of "Project COMP" is to provide adjunctive service to special education teachers, psychologists, and others working with handicapped childrep. This service is in the form of a diagnostic teaching specialist using specific reading instructional methods, materials and techniques appropriate to each child's needs. The project is designed in consort with the Wisconsin Reading Design program but, specifically oriented for special education students. The model is also applicable to the regular classroom student as related in this publication.

Federal funds, through the Division For Handicapped Children, Department of Public Instruction, were initially provided through Title VI-B. From July 1, 1970 through June 30, 1973 the project was supported by Title VI-B funds. Since July 1, 1973 the number of participating schools has grown, with funding provided by local school district budgets, including general state aids, and special handicapped state aid.

Unique to this project is the actual development of an action program for teachers, that when used according to the model, provides feedback to each teacher as to the child's reading recognition and comprehension via computer print out. The print out identifies reading skills accomplished, those not mastered and identifies materials to be used in mastery. In addition, the location of the needed materials accompanys the print out to the teacher.

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The success story, of "Project COMP", as described in this publication was made possible through the cooperation, concern and willingness to provide assistance and counsel during the developmental years of teachers, administrators, consultants and interested lay and professional educators.

A very special tribute is paid to members of the Wisconsin Department of Public Instruction who assisted in the formation of certain phases of the project, evaluated the results and provided continued encouragement.

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Mentally Retarded

Thomas Scharf, Program Supervisor,
Special Learning Disabilities

Catherine Rosenkranz, Title VI Evaluation Consultant

The original school districts participating in the project were: Marinette, Oconto, Peshtigo, Shawano, White Lake, and three classes operated by CESA #3. Currently the project is continued in Marinette, Oconto and White Lake with expansion into Oconto Falls, Florence, Niagara, Coleman, Crivitz, Lena and in most CESA #3 operated classrooms.

C O M P

"COMPUTERIZED OPERATIONAL MATERIALS PRESCRIPTION"

AN INNOVATIVE AND PRACTICAL METHOD TO IMPROVE THE READING SKILLS AND ABILITY OF HANDICAPPED CHILDREN IN THE EDUCABLY MENTALLY RETARDED CLASSROOM. THIS PRESCRIBED PROGRAM HAS BEEN USED SUCCESSFULLY IN THE REGULAR CLASSROOM TO INSPIRE AND ASSIST STUDENTS WITH READING SKILL DEFICIENCIES.

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COMP: A Reading Improvement Project for EMRs

By Catherine I. Rosenkranz
Evaluation Consultant, Title VI

A computerized information system and the Wisconsin Design for Reading are two of the principal components of CESA 3's reading project for EMR students. Computerized Operational Material Prescriptions, better known by its acronym COMP, is a Title VI-B project now in its third year of operation. The objectives of the project are to improve reading recognition and comprehension skills of the students through use of the Wisconsin Design for Reading (WDR) and instructional materials specifically matched to needs of interests of the students. WDR is a carefully structured series of units developed to teach a wide variety of word attack skills to elementary school children. There are 45 units grouped by four levels, each with its own pre- and post-test for mastery.

During the first year of the project, three children were chosen for the project from each of the 15 classrooms cooperating in the project. Because of the distance between schools in this sparsely populated area, the project was redesigned during the second year. Eight classrooms were chosen for the project on the basis of teacher and administrator's interest and cooperation; 59 students were at an appropriate reading level for the project. This is the only large scale application of the Wisconsin Design for Reading (WDR) in a special education program. Each teacher participating in COMP also agreed to the policies of the WDR research projects: to spend a minimum of two hours per week implementing the Wisconsin Design program and to attend inservice training on the WDR by COMP staff.

There were five separate but interdependent features of this project: the Wisconsin Design, weekly testing of students and feedback of results via computer printout; computerized inventory of instructional materials; purchase of instructional materials and equipment to facilitate acquisition of target skills; and inservice activities.

The COMP teacher tested each student on the Peabody Individual Achievement Test (PIAT) using the Reading Recognition and Reading Comprehension subtests and also established instructional levels for each student on the WDR model. Additional information obtained on each child included age, I.Q., interests and learning problems as perceived by the teacher. All of this information was placed in a computer data bank and used for forming instructional groups within the classrooms. Mark Ennis of Marmen Computing, Menominee, Michigan and Dennis Mullen, CESA #3 COMP teacher and project leader, collaborated in designing the computerized data bank.

The diagnostic teacher assigned several target skills for each student to work on and, through weekly visits to each classroom, administered mastery tests, assigned new areas for study, and brought new teaching materials from the COMP or RIMC collections. The teacher received a weekly printout from the continuously updated bank which gives information on each student plus grouping the class by those who had mastered specific target skills and those who had not.

Efforts to provide a computerized retrieval system of instructional materials continued throughout the year. Over 6,000 items were categorized by target reading skills for which it is appropriate, reading difficulty level, appropriate age level(s), interest area and media. Cooperating classrooms listed materials available in their classrooms which they would be willing to

share. A standardized material request form was prepared so that each teacher could indicate her needs for materials by checking the appropriate categories for the students for whom the materials were intended. This request was keypunched, run through the computer and then a printout was provided for the teacher the following week which listed the available materials in her classroom, the COMP collection, the Instructional Materials Center of CESA 3, and in other COMP project classrooms to which the teacher had access.

The COMP contract with participating schools specified that additional inservice time would be given to these teachers. Inservice activities were crucial to the program as they provided a much needed linkage between classroom teachers, instructional experts, media and materials sales representatives and Division for Handicapped Children supervisors. Each meeting also included time for small group discussions among teachers from similar programs.

Criterion levels for the first year of the project were set at a gain of four grade equivalent months because not all of the classrooms were in the project for the full school year. Two classrooms did not reach this level of gain in reading recognition and only one in reading comprehension. Percentage of deficits in the WDR show more success at the elementary level than at the grade level, partially because a higher level of expectancy was established for the older students and they were tested on more WDR units. This may account for the lack of significant correlation between mastery of WDR units and gains on the PIAT. Experience with non-retarded children indicates that from four to six years are required for mastery of all four levels.

Grade equivalent scores on the PIAT were obtained from a sample of children in regular grades in the mainstream of education with no separate norms available for children in special education. COMP gains in both reading recognition and reading comprehension appear to average about six months over a full year period which is in line with gains shown by other high quality special education programs.

Other indications of the success of COMP are the continued interest of the schools in participating in the project, indication by the teachers that their interest in teaching reading has increased, and more requests for instructional materials to teach reading as well as more library books in the classroom for recreational reading.

Several modifications have been made in Phase III of COMP. Although the COMP teacher continues to visit each classroom weekly with new materials and helps in the instruction of reading, and with testing on WDR units as children indicate mastery, updating of student records occurs only every three weeks. Cost of computerized record keeping averages $1.75 per pupil per month. Record keeping for several classrooms is on McBee retrieval cards so that a cost analysis of the two systems will be available at the close of the present year.

COMP — Current Status

As of December 21, 1973, COMP had 833 children enrolled. These children break down into the following areas:

Educable Retarded	160
Title I	347
K-6 Regular Education	326

The Spring, 1974 data will provide us with further proof that COMP does work!

Miss Donna Koehler is employed as the COMP Teacher this year while Mr. Mullen remains Program Director. The second semester will add more children to COMP as more districts have expressed interest in the program.

Cost sheets are available as well as actual computer printouts of stat sheets, materials, student groupings, etc. Just write and ask for samples of COMP.

The COMP future could see new communications turn around time with the addition of a C.E.S.A. based ATS terminal. This would allow the COMP Teacher to input data and receive data directly from the computer. The COMP Teacher works only with special education pupils in the C.E.S.A. #3 area.

Plans are developing for a COMP-Math Project for the 1974-75 fiscal year. We believe the two COMP components provide a method of pupil accountability and ease the teacher's load by specifically printing out pupil weaknesses and matching these to available media.

We would be happy to share our data with you.

PROJECT COMP:

EMR Reading Program Also Helps Regular Students

by Catherine Rosenkranz

CAN AN INNOVATIVE READING PROGRAM that improved the reading ability of educable mentally retarded (EMR) students help non-handicapped students too? Dennis Mullen, CESA No. 3's Coordinator of Special Education, thinks it can and has some preliminary data to support his view.

Project COMP, an acronym for Computerized Operational Material Prescriptions, was originated by CESA No. 3 in 1970 as a Title VI Project. It was designed to upgrade reading instruction in EMR classrooms scattered throughout a large rural area by (1) providing a tightly structured reading program, and (2) increasing the availability of instructional materials beyond those available within each individual classroom. The project has pilot-tested the efficacy of the Wisconsin Design for Reading (WDR) with educable level students and the feasibility of using a computer to prescribe appropriate individualized instructional levels and to select instructional materials.

Using local funds, White Lake School District, White Lake, Wis., field-tested COMP's methods with regular students. White Lake's interest in COMP was generated by the project's success with intermediate EMR students plus the fact that their regular students were not showing a full year gain in reading growth on standardized tests. Therefore, District Superintendent William Geenan decided on extending COMP to his regular classes.

COMP's success has been evaluated for both regular and special education students through pre- and post-testing of students with the Reading Recognition and Reading Comprehension sub-tests of the Peabody Individual Achievement Test (PIAT). This individually administered test instrument does not require written responses so it is appropriate to use with retarded students. In addition, it has been used with and normed on non-handicapped students and is, therefore, also appropriate for their use.

Results with Regular and EMR Students

Although all of the students in Kindergarten through Grade 6 were in the COMP Program at White Lake, only Grades 2 through 6, plus the district's two special education classes, are included in the test data summarized below. Table 1 shows the mean test scores for each class at each of four testing times.

Ms. Rosenkranz is Former Title VI Evaluation Consultant in the Division for Handicapped Children, DPI, and is now on the Faculty of Rhode Island College.

TABLE 1

GAINS IN READING COMPREHENSION AND READING RECOGNITION

As Shown on PIAT Sub-tests

Reading Recognition

Grade	Fall '71	Spring '72	Fall '72	Spring '73	Two year gain
2	1.3	2.4	2.7	3.7	2 yrs. 3 mos.
3	2.4	3.1	3.1	4.2	1 yr. 8 mos.
3 & 4	3.6	5.1	4.7	5.8	1 yr. 9 mos.
5	4.8	6.2	5.8	7.4	2 yrs. 6 mos.
6	6.0	7.2	6.8	8.7	2 yrs. 7 mos.
Sec. EMR	4.8	6.6	6.6	7.0	2 yrs. 2 mos.
Int. EMR	2.3	2.7	2.4	4.0	1 yr. 7 mos.

Reading Comprehension

Grade	Fall '71	Spring '72	Fall '72	Spring '73	Two year gain
2	1.0	2.4	2.3	3.4	2 yrs. 4 mos.
3	2.5	2.8	3.1	3.6	1 yr. 1 mo.
3 & 4	3.5	4.1	4.4	5.4	1 yr. 9 mos.
5	4.2	4.7	5.1	5.6	1 yr. 4 mos.
6	5.2	5.8	6.4	8.1	2 yrs. 9 mos.
Sec. EMR	4.7	6.0	5.4	7.0	2 yrs. 3 mos.
Int. EMR	2.3	2.5	2.6	4.0	1 yr. 7 mos.

As can be seen, the reading ability of both regular and special students made consistent gains through COMP. For the group as a whole, Reading Comprehension went from an average of 3.3 years grade equivalent score in the fall of 1971 to an average of 5.4 in the spring of 1973. COMP appears to be the reason for the White Lake students' change from below average reading gains to above national norms.

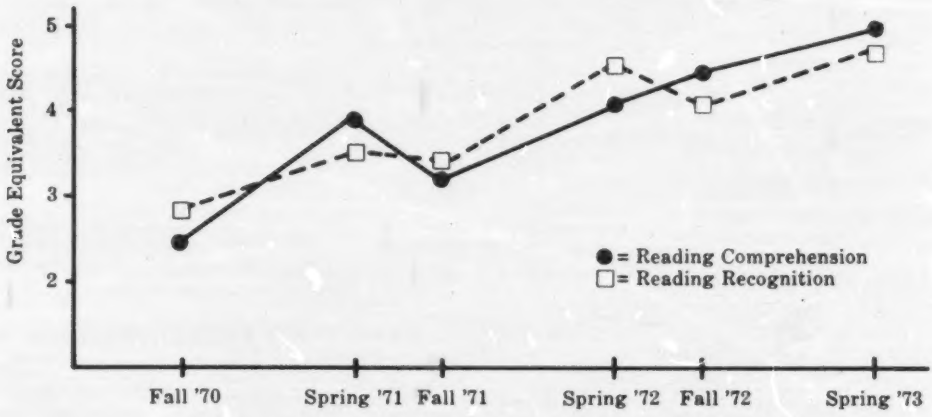
Unfortunately, no special education norms have been established by any publishers of standardized tests. An informal criterion level for program evaluation is approximately half the gain expected of non-handicapped children. Both the intermediate and secondary EMR classes far exceeded this criterion level, especially at the secondary level where the class as a whole also had a higher IQ level than one normally encounters in special education programs.

Results with EMR Students

Four White Lake EMR students at the intermediate level were in Project COMP for three years. They were originally selected by their teacher as the students who were having the most difficulty in reading. Their reading growth over the three year period is shown in Figure 1.

FIGURE 1

Mean Reading Scores for 4 EMR Students Over A Three Year Period



As can be noted, these four students made over 8 months gain per year in reading comprehension and close to 7 months gain each year in reading recognition skills.

It is not possible to compare gains across three years for other EMR students in the program because of changes in individual students participating in COMP. However, average gains for each year can be seen in Table 2:

TABLE 2

Gains in Reading Made by EMR Students in COMP in Grade Equivalent Scores

Year	No. of Students	Reading Recognition Pre	Post	Gain	Reading Comprehension Pre	Post	Gain
1970-71	34	2.5	3.4	.8	2.6	3.3	.6
1971-72	105	3.4	4.2	.7	3.2	3.8	.6
1972-73	132	3.8	4.7	.8	3.5	4.3	.7

The 6-month or greater grade equivalent gains shown by these students equal or exceed the gains made in other high quality programs for educable students where the PIAT is being utilized for evaluation.

How COMP Works

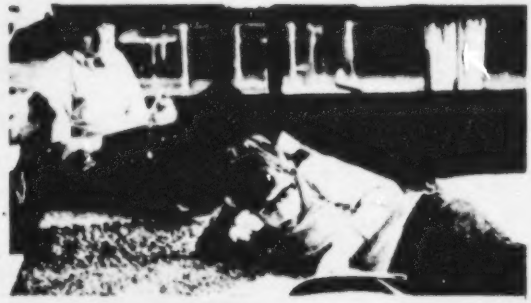
There are five separate but interdependent features in Project COMP: The Wisconsin Design for Reading; (WDR) periodic testing of students and feedback of results via computer printout; computerized inventory of instructional materials; purchase of instructional materials and equipment to facilitate acquisition of target skills; and inservice activities.

The Wisconsin Design for Reading has 45 objectives arranged into four sets or levels (A through D) of progressive difficulty. "It is presumed that upon attainment of all 45 discrete objectives the student will be able to decode, independently, structurally and phonically regular words and will know on sight common irregular words. . . . [The program] links attainment of the terminal goal with attainment of the discrete objectives and serves to focus staff efffort on an educational priority to providing feedback on the progress of groups of pupils toward the terminal goals." [1]

Mark Ennis of Marmen Computing, Menominee, Michigan and Dennis Mullen, COMP Project Director, collaborated in designing a computerized data bank which would provide teachers with periodically updated pupil progress through the WDR objectives plus other pupil characteristics related to educational needs. Instructional materials for teaching reading which are available to special education teachers through the COMP collection, the CESA No. 3 Rural Instructional Materials Center (RIMC), or cooperating classrooms, have been entered into a computerized retrieval system. Over 6000 items are categorized by target reading skills for which they are appropriate: reading difficulty level, appropriate age level(s), interest area, and media type. The White Lake classes for non-special education students have access to a wide range of materials in their own IMC, many of which were purchased through Title II funds. These are also coded for computerized retrieval.

It's Fun to Collect Tests:

Photo: White Lake Schools



Reading and Relaxing at White Lake School

For both regular and special classrooms, a standardized material request form has been prepared so that each teacher can indicate her needs for materials by checking the appropriate categories for the students for whom material is needed. This request is key-punched, run through the computer, and a printout delivered to the teacher listing appropriate materials in her classroom and from other sources available to her.

The COMP contract with participating schools specifies that additional inservice time will be given to teachers in the project. These inservice activities are crucial to the success of the program as they provide a much needed link between classroom teachers, instructional experts, and media and materials. For the special education teachers, COMP inservice also provides time for small group discussions among teachers from similar programs to encourage sharing of ideas for teaching reading.

Now that COMP is no longer operating under Title VI funding, new schools entering the program are expected to finance their own three days of inservice training. Held throughout the school year, this inservice program introduces teachers to both the WDR and COMP methods for testing and recording gains, use of the computerized printouts and materials request procedures. Inservice fees are $525 per school.

Menominee (Mich.) and Crivitz (Wis.) public schools will be using COMP for a total of 356 Title I students during the 1973-74 school year. Special education classes in northern Wisconsin will be involved in Project COMP next year on a fee basis to meet anticipated costs.

Program Costs

Projected cost for a program consists of the inservice fee and $10 (maximum) charge per pupil, which includes seven different data runs summarizing pupil status and progress and one statistical summary report. This provides seven groupings of students for instructional purposes with WDR plus the complete statistical summary at the end of the year. The cost could possibly change with fewer data runs.

Special education classes using COMP and served by CESA No. 3's RIMC will continue to have access to the existing computerized materials bank. Additional items from their own school may be added to the computerized system for 80c per item. For other schools, the cost of entering their own collection of instructional materials into the computerized system is $300 for the first 600 items plus an annual storage fee of 30c per item. There are also some minimal fees involved in acquiring materials for the WDR in the initial year of a project—about $125.

National Recognition

Project COMP has received national recognition from Special Education Regional Media Centers. Norman Howe, assistant director of the IMC RMC network office, wrote Mr. Mullen in May 1973 that they plan to prepare an information packet describing COMP's Materials Storage Retrieval Evaluation System for distribution throughout the SEIMC network. In March 1973, in Washington, D.C., Mullen also gave a slide and tape presentation on COMP to members of the U.S. Office of Education's Bureau for Education of the Handicapped and the National Council for Exceptional Children. Dr. Paul Andereck, of the Bureau for the Education of the Handicapped, characterized COMP as "a viable and operational system." He says that "the program can (and does) measure child-change as a result of its service." [2]

Additional Title VI funds have been sought to extend COMP's methods to the teaching of arithemetic through use of criterion-referenced test instruments and coding of instructional materials to meet specific objectives COMP's methods can be replicated in any area where compatible computing facilities are available, or the method can be used by "plugging in" to an IMC data base and having printouts mailed to the user.

Evaluation

The Title VI Evaluation Report which summarized COMP's three years of operation noted that students have indeed made superior gains in both reading recognition and reading comprehension. It is difficult to isolate the reasons for the project's success because various thrusts were introduced simultaneously: Wisconsin Design for Reading, in service training, more instructional materials, computerized retrieval of materials, and frequently up-dated reports on pupil achievement.

WDR provides a structured, sequential approach for teaching reading skills, particularly in the area of phonics. Other project activities that may have been significant factors in increasing teacher motivation to teach reading are the inservice activities and the availability of and incentives to use a wider variety of instructional materials and equipment.

Could all or part of COMP's reading program be beneficial to regular or special education students in your school? Project Director Dennis Mullen invites your inquiries about COMP. These should be addressed to him at CESA No. 3, Gillett, Wis. 54124.

References

1. Anne Buchanan, Mary R. Quilling and Norman Graper, "Monitoring the Progress of the Group in an Individualized Reading Program Based On Behavioral Objectives." Paper presented at the American Educational Research Association annual meeting, February, 1971.

2. Paul Andereck, Director of Media Services and Caption Film Branch, U.S. Office of Education, Bureau for the Education of the Handicapped. News release dated March 28, 1973.